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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,047	10/01/2003	Kyoung-Ja Woo	06181/0200102-US0	6651

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EXAMINER	
VANOY, TIMOTHY C	
ART UNIT	**PAPER NUMBER**
1754	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/678,047	WOO ET AL.	
	Examiner	Art Unit	
	Timothy C. Vanoy	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2-4 and 6-10* is/are allowed.

6)☒ Claim(s) *1 and 12-20* is/are rejected.

7)☒ Claim(s) *1,5,11,16,18 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/20/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

a) In claim 1, the phrase "In a method for synthesizing metal oxide nanoparticles having better magnetic characteristics, a method for synthesizing. . ." is objected to for being unnecessarily confusing because it suggests that two different methods are being claimed in claim 1. It is suggested to substitute the claim phrase "In a method for synthesizing metal oxide nanoparticles having better magnetic characteristics, a" with "A".

b) In claim 1 line 4, "surfactant" is misspelled.

c) In claim 5 line 2, "ethylene" is misspelled.

d) In claim 11, there is no antecedent basis in claim 1 for the "the trivalent metal salt". Claim 1 mentions a "metallic salt not less than trivalent", but does not mention the "the trivalent metal salt" of claim 11.

e) Claim 16 is objected to for being a functional duplicate of claim 15 because it is expected that the composition of claim 15 would also be made by the same claimed method.

f) Claim 18 is objected to for being a functional duplicate of claim 17 because it is expected that the composition of claim 17 would also be made by the same claimed method.

g) Claim 20 is objected to for being a functional duplicate of claim 19 because it is expected that the composition of claim 19 would also be made by the same claimed method.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 12, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) In claim 1, the claim language "In a method for synthesizing metal oxide nanoparticles having better magnetic characteristics" does not particularly point out and distinctly set forth what the metal oxide nanoparticles are compared to so that they can be described as having "better magnetic characteristics".

b) The term "high" in claim 1 is a relative term, which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

c) A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 12, 13 and 14 recite a broad temperature recitation, which is followed by a narrower statement of these same broad ranges via the "more preferable" clause.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,770,172 to Linehan et al.

The Linehan et al. patent discloses a process for making nanometer-sized (i. e. sizes that are not more than 20 nm.: please see col. 3 lines 58-62) metal oxide compounds to include maghemite; alpha-Fe_2O_3 (i. e. hematite) and mixtures thereof (please see col. 6 lines 4-10).

The difference between the applicants' claims and the Linehan et al. patent is that the applicants' claims are specifically limited to maghemite; alpha-Fe_2O_3 (i. e. hematite) and mixtures thereof while col. 6 lines 4-10 in the Linehan et al. patent discloses a variety of metal oxides to include the maghemite; alpha-Fe_2O_3 (i. e. hematite) and mixtures thereof in applicants' claims 15-20, *however* it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made *because* the courts have already determined that each species within a prior art reference's list of species is "inherently anticipated" by one of ordinary skill in the art: please see the discussion of the *In re Petering* 301 F.2d 676, 681, 133 USPQ 275, 280 (CCPA 1962) court decision set forth in section 2144.08(II)(A)(4)(a) in the MPEP 8th Ed. Rev. 3, Aug. 2005.

The difference between the applicants' claims and the Linehan et al. patent is that the applicants' claims limit the composition to being "rod-shaped".

A review of the Linehan et al. patent reveals that they also made their metal oxide nanoparticles in a method that also involved a "reverse micelle solution" (please see col. 3 lines 8-10 and col. 3 lines 55-57 in the Linehan et al. patent, for example).

It would have been obvious to one of ordinary skill in the art at the time the invention was made *to have further described* the nanometer-sized metal oxides set forth in col. 6 lines 4-10 in the Linehan et al. patent as being "rod-shaped", in the manner set forth in applicants' claims 15-20, *because* it is reasonably expected that the same maghemite and hematite produced by a similar process using a reverse micelle solution would inherently be in the same shape as that described by the applicants'

claims because both the applicants and Linehan et al. use reverse micelle solutions to produce the same maghemite and hematite. Please note that the courts have already determined that such mere recognition of latent properties in the prior art (in this case, the shape of the nanometer-sized metal oxides disclosed in col. 6 lines 4-10 in the Linehan et al. patent being "rod-shaped") does not render non-obvious an otherwise known invention: please see the discussion of the *In re Wiseman* 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) court decision set forth in section 2145(II) in the MPEP 8th Ed. Rev. 3, Aug. 2005.

Claims 1-14 have not been rejected under either 35USC102 or 35USC103 because there is nothing in U. S. Patent 5,770,172 which teaches or suggests that a proton scavenger be added to the reverse micelle solution, in the manner required by the applicants' claim 1 and the claims dependent thereon.

U. S. Patent 4,714,693 disclosing a reverse micelle solution containing a hydrocarbon solvent, a surfactant and a metal ion containing a water core (please see the abstract) is made of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy C Vanoy
Patent Examiner
Art Unit 1754

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